

REMARKS/ARGUMENTS

Applicants have received and carefully reviewed the Office Action of the Examiner mailed July 21, 2006. Claims 1-34 remain pending, with claims 1-9 and 17-25 withdrawn from consideration. Claims 10, 13, and 26-32 have been amended. Support for the amendments is found in the specification, claims, and drawings as originally filed at, for example, page 3, lines 19-23. No new matter has been added. Reconsideration and reexamination are respectfully requested.

Rejections under 35 U.S.C. § 112, second paragraph

Claims 27-32 are rejected as failing to provide antecedent basis for "first" and "second" material. The claims have been amended to provide the necessary antecedent basis. Withdrawal of the rejection is respectfully requested.

Rejection under 35 U.S.C. § 102(b), (e)

Claims 26-28, 30, 33, and 34 remain rejected as being anticipated by Son et al. (US 2004/0161929). Applicants traverse the rejection. In response to Applicants' previous arguments, the Examiner asserts that the claims do not require the layers be directly deposited onto one another.

Applicants submit that the claimed recitation of "a conductive material deposited on the substrate", "a passivation material deposited on the conductive material", and "an island of a catalytic material formed in and on the vias" would indicate to one of ordinary skill in the art that a material "deposited on" a previous layer is in contact with that layer. MPEP 2111.01 "Plain Meaning" states:

This means that the words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) (discussed below); *Chef America, Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1372, 69 USPQ2d 1857 (Fed. Cir. 2004) (Ordinary, simple English words whose meaning is clear and unquestionable, absent any indication that their use in a particular context changes their meaning, are construed to mean exactly what they say.

(Emphasis added). The plain meaning of "on", as shown by the attached dictionary definitions from the Merriam-Webster OnLine dictionary, indicates position in or contact with another material or object. Applicants submit that the plain meaning of "on" indicates the material that is "deposited on" another layer is in contact with that layer. For at least the reasons set forth below, Son et al. do not appear to teach the structure recited in independent claim 26, or the claims dependent thereon.

Independent claim 26, as amended, recites in part:

an island of a catalytic material formed in and on the vias to the conductive material, wherein the island of catalytic material is formed by exposing the catalytic material to a temperature sufficient to form a ball having a diameter similar to a thickness.

Emphasis added. Son et al. do not appear to teach islands of catalytic material as recited in independent claim 26. Son et al. appear to teach a device having a substrate 401, an emitter electrode 410 on the substrate, a resistor layer 420 over the electrode, a metal barrier layer 430 on the resistor layer, a catalyst layer 510 over the barrier layer, and a protective layer on the catalyst layer. See paragraphs 0040-0043 and FIG. 8. Son et al. do not appear to teach an island of catalytic

material formed in an on vias through a passivation material to a conductive material, as is recited in the independent claim.

The structure of Son et al. appears to be as follows, with the layers shown in order of application corresponding to FIGS. 7-10, relied on by the Examiner:

passivation layer 460
gate electrode 450
insulator layer 440
barrier layer 430
resistor layer 420
emitter electrode 410
substrate 401

Son et al. teaches that after formation of the above structure, shown in FIG. 7, a gate hole is etched. See paragraphs [0039] to [0041]. Son et al. then teach forming a catalyst layer 510, 515 over the entire barrier layer 430 exposed in the etched gate hole. See paragraph [0042] and FIG. 7. Son et al. then teach depositing protective layer 620 over the catalyst layer, followed by selective removal of the protective layer and portions of the catalyst layer 515 to expose catalyst layer 510 in gate hole 465. See paragraphs [0043] to [0048] and FIGS. 8-9. Son et al. do not appear to teach forming an island of catalytic material by exposing catalytic material to a temperature sufficient to form a ball having a diameter similar to a thickness, as is recited in independent claim 26.

Additionally, there is no motivation for one of ordinary skill in the art to modify the device of Son et al. to achieve the claimed apparatus. Son et al. do not appear to teach each and every element of independent claim 26 or the claims dependent thereon. Reconsideration and withdrawal of the claims are respectfully requested.

Claim 26 remains rejected as being anticipated by Lee et al. (US 6,339,281 B2). Applicants submit that Lee et al. do not appear to teach an apparatus as is now recited in independent claim 26, as amended. Lee et al. appear to teach a structure having a cathode electrode 2 formed on a glass substrate 1, and a catalyst layer 9 on the electrode 2. See column 4, lines 2-3 and 28-36, and FIG. 2H. Lee et al. do not appear to teach an apparatus having an island of catalytic material formed by exposing catalytic material to a temperature sufficient to form a ball having a diameter similar to a thickness, as is now recited in claim 26. Additionally, there is no motivation for one of ordinary skill in the art to modify the structure of Lee et al. to achieve the claimed apparatus. Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 26 and 27 remain rejected as being anticipated by Hsu (US 6,890,233 B2). Applicants submit that Hsu does not appear to teach an apparatus having an island of catalytic material formed by exposing catalytic material to a temperature sufficient to form a ball having a diameter similar to a thickness, as is now recited in claim 26. Additionally, there is no motivation for one of ordinary skill in the art to modify the structure of Hsu to achieve the claimed apparatus. Reconsideration and withdrawal of the rejection are respectfully requested.

Rejection under 35 U.S.C. § 103

Claims 10-16, 28, and 29 remain rejected as being unpatentable over Son et al. in view of Shen et al. (US 6,143,474) and further in view of Zenke et al. (US 5,187,557). Independent claim 10, as amended, recites in part:

a catalyst island formed on the at least one via connected to the HfN layer, wherein the catalyst island is formed by exposing catalytic material to a temperature sufficient to form a ball having a diameter similar to a thickness.

Emphasis added. Independent claim 13, as amended, recites in part:

at least one catalyst island in contact with the HfN layer, wherein the catalyst island is formed by exposing catalytic material to a temperature sufficient to form a ball having a diameter similar to a thickness.

For at least the reasons set forth above, Son et al. do not appear to teach such structures. Neither Shen et al. nor Zenke et al. appear to teach what Son et al. lack. Additionally, there is no motivation for one of ordinary skill in the art to modify Son et al., Shen et al., or Zenke et al. to achieve the claimed structures.

Further, the Examiner acknowledges that Son et al. fail to teach a layer of HfN and do not teach the composition of the resistor layer. The Examiner cites Zenke as disclosing that titanium nitride and hafnium nitride are routinely interchangeable in semiconductor applications. Shen et al. is cited as teaching that a resistor layer is an oxide layer. The Examiner asserts that it would have been obvious to use a conductive oxide layer because Shen teaches that a resistor layer is an oxide layer. Applicants respectfully traverse the rejection.

Applicants submit that there is no motivation for one of ordinary skill in the art to modify the device of Son et al. to achieve the invention as claimed. Shen et al. appear to teach a structure in which a silicon dioxide layer is coated onto a

substrate, is masked and etched to make a single layer structure with different resistance values. See column 3, line 48 through column 4, line 22. Applicants submit that there is no motivation for one to combine the teachings of Shen et al. and Son et al, and that even if one did, the resulting device would appear to be a single layer resistor. None of Son et al., Zenke et al., or Shen appear to teach the structure as recited in independent claims 10 and 13, or the claims dependent thereon. Reconsideration and withdrawal of the rejection are respectfully requested.

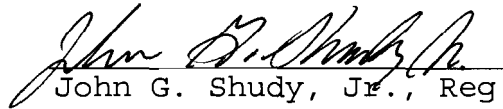
Claim 31 remains rejected as being unpatentable over Son et al. in view of Gossen (US 5,710,656) or Liu et al. (US 6,268,615). Claim 32 remains rejected as being unpatentable over Son et al. in view of Shen. For at least the reasons set forth above, Son et al. do not appear to teach the basic elements of independent claim 26, as amended, from which claims 31 and 32 ultimately depend. None of Gossen, Liu et al. or Shen appear to provide what Son et al. lack. Thus, any combination of Son et al., Gossen, Liu et al., or Shen also fails to teach or suggest the elements of claims 31 and 32. Reconsideration and withdrawal of the rejections are respectfully requested.

Application Serial No. 10/749,637
Amendment dated October 12, 2006
Reply to Office Action dated July 12, 2006 and Advisory Action
dated October 4, 2006

Reconsideration and reexamination are respectfully requested. It is submitted that, in light of the above remarks, all pending claims are now in condition for allowance. If a telephone interview would be of assistance, please contact the undersigned attorney at 612-677-9050.

Respectfully submitted,

Date: 10-12-06



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